

## DESCRIPTION OF THE LARVA AND PUPA OF *AMETOR SCABROSUS* (HORN) (COLEOPTERA: HYDROPHILIDAE)

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The immature stages of some of our North American genera of hydrophilid beetles have not been described. One of these genera is *Ametor* (Semenov, 1900, p. 614). The larva of *Hydrobius scabrosus*, now *Ametor scabrosus* (Horn), was mentioned briefly by Richmond (1920) but it was not formally described. Therefore, when several larvae and pupae in association with adults of *A. scabrosus* were found in the U. S. National Museum collection, this description, based on larval and pupal characters, was prepared to show the relationship of this genus to related genera.

### DESCRIPTION OF THE LARVA

(FIGURE 3)

Total length, 6.0 mm.; width of thorax 0.85 mm. Color brownish with sclerotized portions darker brown. Integument covered with irregularly arranged asperities.

Head quadrangular (Fig. 6); 0.7 mm. wide; 0.6 mm. from labroclypeus to occipital foramen. Frontoclypeal suture feebly indicated. Ecdysial cleavage line present and forked near base; frontal arms diverging and extending to bases of antennae. Frons sagittate. Cervical sclerites present, irregularly rectangular in shape. Ventral surface of head (Fig. 8) with few setae laterally, glabrous medially; gula pentagonal, rounded posteriorly; two posterior tentorial pits behind gula.

Labroclypeus (Fig. 4) asymmetrical; with four teeth, left tooth separated from others; anterolateral projections of epistoma rounded, with setae on anterior margin, and subequal in length to labroclypeal teeth.

Ocular areas with six ocelli arranged in an ellipse. Ocelli rather evenly spaced except for a wider gap dorsally; anterior three slightly larger than posterior three.

Antenna short, subcylindrical, slightly longer than length of stipes. First segment constricted slightly in middle and about a third longer than penultimate segment. Ultimate segment small, about a third as long as penultimate segment and with a terminal seta.

Mandibles symmetrical, prominent, stout, sharply pointed apically. Each mandible with one minute and two well-defined inner teeth. Molar area smooth and rounded.

Maxilla with stipes stout, tapering distally, bearing a row of four stout setae on inner margin. Palpifer jointlike, with slender sclerotized appendage on inner side as long as first segment of palpus and with a terminal seta. Palpus tapering distally; first segment short and only two-thirds as wide

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as palpifer; penultimate segment tapering distally; ultimate segment tapering sharply, two-thirds as long as penultimate and with a basal seta.

Labium extending as far forward as palpifer. Penultimate segment of palpus short. Ultimate segment two and a half times longer than penultimate and with a terminal seta. Ligula distinct, twice as long as penultimate segment of palpus. Palpiger subquadrate; ventrally with two setae arising near base of ligula. Mentum slightly wider than submentum, narrowing posteriorly, anterolateral angles with few setae dorsally and ventrally.

Prothorax broader than long, with sides gently rounded, wider posteriorly. Anterolateral angle with three to six long setae; posterolateral angle with one to four long setae. Sagittal line present. Prosternal sclerite (Fig. 7) broader than long, with an incomplete sagittal line. Mesothorax wider than prothorax but only half as long; with two small, narrow, anterior sclerites and two large, irregularly triangular, posterior sclerites; lateral margins each provided with a prominent spiracular tubercle and a setiferous lobe; sagittal line present. Metathorax slightly wider than mesothorax; with two large anterior sclerites and two small, poorly defined, posterior sclerites; sagittal line present.

Legs four-segmented, about as long as width of prosternal sclerite. Coxae moderately widely separated, transverse. Trochanter about half as long as coxa. Femur slightly longer than tibiotarsus. Tarsal claw single, with two inner setae near base.

Abdomen with eight distinct segments; ninth and tenth segments reduced. Segment 1 with a pair of small sclerites anteriorly. Remaining segments without sclerites and separated by an inter-segmental membrane. True segmentation obscured by additional transverse folds on segments; segmental folds continued on to sternum. Each segment with four folds. Segment 1 lacks setose tubercles on first and second fold; third and fourth fold with four setose tubercles. Segments 2 through 6 with first fold without setose tubercles; second fold with two; third and fourth folds each with four setose tubercles. Segment 7 with four setose tubercles only on fourth fold. In addition to the tubercles discussed above, a large spiracular tubercle followed by a moderately large setose tubercle is present on each side of segments 1 through 7. Numerous, small, blunt setae are present on all tubercles. Epipleurites and hypopleurites prominently lobed. Eighth tergum represented by superior valve of stigmatic atrium, a large, slightly broader than long sclerite; feebly crenulate posteriorly and with a stout seta ventrally at posterolateral angles. Ninth tergum trilobed; middle lobe large, divergent posteriorly and with two setae on caudal margin; lateral lobes narrower and with a stout seta ventrally near caudal margin. Spiracles present. Mesocerci prominent, conical; each bearing two setae, one arising posteriorly, the other arising laterally. Paracerci present, flattened, apices incurved, apparently unsegmented and each with an apical seta.

One larva had the left tooth of the labroclypeus closer to the three other teeth so that the gap between them was not so distinct as shown in figure 4.

The larva of *Ametor scabrosus* runs to couplet 10 in Leech and Chandler's (1956, pp. 339-340) larval key but does not fit either alternative. The five genera, *Hydrobius*, *Helochares*, *Cymbiodyta*, *Sperchopsis*, and *Ametor*,

that run to couplet 10 in Leech and Chandler's key may be separated by the following couplets:

- |    |   |             |
|----|---|-------------|
| 1. | Labroclypeus with four distinct teeth, outer left tooth usually more distant from others; each mandible with two distinct inner teeth and only a feeble third basal tooth ----- | AMETOR      |
|    | Labroclypeus with five or more teeth; each mandible with two or three distinct inner teeth -----  | 2           |
| 2. | Labroclypeus with five teeth; each mandible with three distinct inner teeth -----   | 3           |
|    | Labroclypeus with six or more teeth; each mandible with two inner teeth -----   | 4           |
| 3. | Third (middle) tooth of labroclypeus as large as adjacent teeth; prosternal sclerite divided by a sagittal line -----   | HYDROBIUS   |
|    | Third (middle) tooth of labroclypeus minute, less than half as long as adjacent teeth; prosternal sclerite not divided by a sagittal line -----                                 | SPERCHOPSIS |
| 4. | Labroclypeus with six distinct teeth in two groups, two on left and four on right; anterior sclerites of metathorax with caudal projections -----                               | HELOCHARES  |
|    | Labroclypeus with more than six teeth, those toward right not clearly defined and with several smaller teeth; anterior sclerites of metathorax without caudal projections ----- | CYMBIODYTA  |

## DESCRIPTION OF PUPA

(FIGURES 1 and 2)

Total length, 6.0 mm.; width 2.5 mm. Color white; glabrous except for yellowish styli described below.

Head with a pair of supraorbital styli adjacent to each eye.

Pronotum with 20 styli as follows: three on each anterolateral angle, two on each side of midline on anterior margin, three on each posterolateral angle and two on each side of midline on posterior margin. Mesonotum with a pair of styli, one stylus on each side of scutellum. Metanotum with a pair of styli, one on each side of midline.

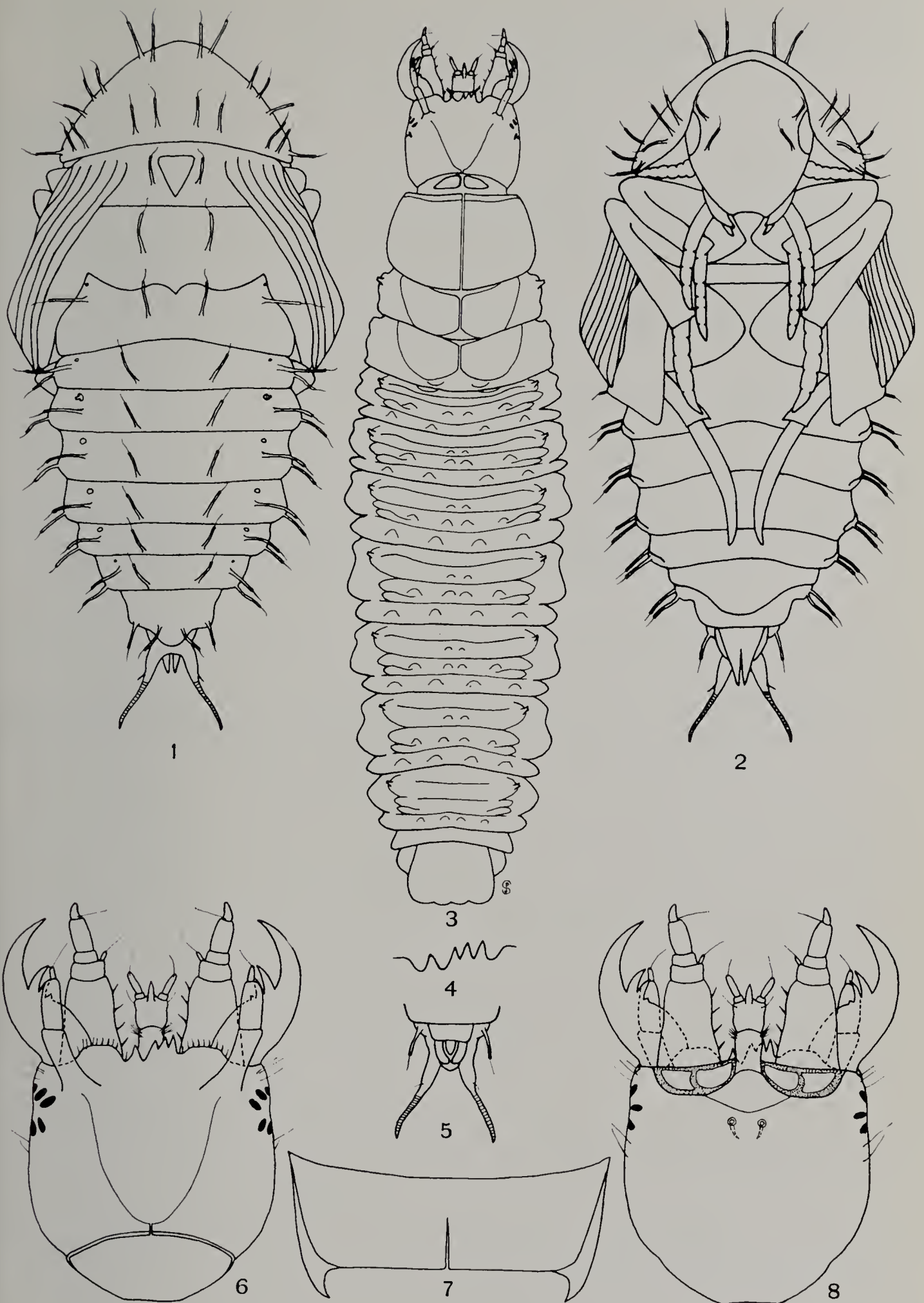
Abdomen with four styli on first segment, one on each side of midline and one posterior to each spiracle. Segments 2 through 7 each with six styli arranged as follows: one stylus immediately posterior to each spiracle, one stylus on each side of midline, and one pleural stylus on each side. Segment 8 has four styli along posterior margin. Segment 9 has two long cerci, as long as width of eighth segment. Each cercus has a single, small, lateral seta. Segments 1 through 7 each with a pair of spiracles, those on segments 1 and 7 are reduced and difficult to find.

Antennae and femora extend outward at right angles from body axis. Maxillary palpi are directed posteriorly. Tibiae are folded against femora. Tarsi are turned backward, parallel with body axis.

The pupa (Fig. 2) described above is a female as indicated by the two partially developed styli seen in ventral view. Male pupae viewed ventrally show the partially developed parameres and median lobe of the genitalia (Fig. 5).

One pupa had one additional stylus on the posterior margin of the pronotum making a total of 21.

The pupa of *Ametor scabrosus* runs to couplet 9 in Leech and Chandler's (1956, p. 341) key to certain hydrophilid pupae. Five genera, *Ametor*,



FIGURES 1-8, *Ametor scabrosus*: 1—pupa, female, dorsal view; 2—pupa, female, ventral view; 3—larva, dorsal view; 4—larva, labroclypeus; 5—pupa, caudal segments of male, ventral view; 6—larva, head, dorsal view; 7—larva, prosternum; 8—larva, head, ventral view.

*Hydrobius*, *Sperchopsis*, *Bersosus* and *Laccobius*, run to couplet 9 and these may be separated by the following couplets:

- |    |   |             |
|----|---|-------------|
| 1. | Supraorbital styli lacking or vestigial; 20 or 24 pronotal styli in all ----- | 2           |
|    | Supraorbital styli well-developed; 20, 24 or 26 pronotal styli in all -----   | 3           |
| 2. | Pronotal styli 20 in number-----  | HYDROBIUS   |
|    | Pronotal styli 24 in number-----  | SPERCHOPSIS |
| 3. | Pronotal styli 20 in number-----  | AMETOR      |
|    | Pronotal styli 24 or 26 in number-----  | 4           |
| 4. | Pronotal styli 24 in number-----  | LACCOBIUS   |
|    | Pronotal styli 26 in number-----  | BEROSUS     |

Eight pupae and six larvae were examined in the course of this study. The specimens were collected in 1891 from streams in Yellowstone National Park, Wyoming, and in the Bear Paw Mountains, Montana. All the larvae appear to be last instars.

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